••• REMARKS/ARGUMENTS •••

The Official Action of December 1, 2008 has been thoroughly studied. Accordingly, the changes presented herein for the application, considered together with the following remarks, are believed to be sufficient to place the application into condition for allowance.

By the present amendment the specification has been changed in the paragraph bridging pages 7 and 8 to recite "As shown below in the following examples and otherwise discussed herein, the resulting high-silicon steel exhibited an excellent combination of mechanical, oxidation resistance and corrosion resistance properties."

In addition, claim 1 has been amended to recite a high silicon steel (to provide antecedent basis for claim 4), to limit the steel to contain from 5 to 10 wt.% Si (the term "about" has been deleted), and to recite that the secondary phases include carbides and ordered BBC phases.

Further claim 9 has been amended to recite that carbon-containing high-silicon steel sheets are produced with thicknesses of from about 0.1mm to about 0.5 mm.

Entry of the changes to the specification and claims are respectfully requested.

Claims 2-12 are pending in this application.

On page 2 of the Office Action the Examiner objected to the specification on the basis that the paragraph bridging pages 7 and 8 recited "As shown below...."

The basis of the Examiner's objection was that there was no data that follows with respect to the properties of the silicon steel.

In response to this objection, the paragraph bridging pages 7 and 8 of the speciation has been changed to recite "As shown below in the following examples and otherwise discussed herein, the resulting high-silicon steel exhibited an excellent combination of mechanical, oxidation resistance and corrosion resistance properties."

On page 3 of the Office Action the Examiner has rejected claims 1-12 under 35 U.S.C. §112, second paragraph.

As noted above, the claims have been amended to address and overcome each of the basis upon which the claims were rejected under 35 U.S.C. §112, second paragraph.

The Examiner has included a *Claim Interpretation* section on page 3 under which the Examiner states:

> The meaning of the term "about" is flexible and is similar in meaning to such terms as approximately of nearly (Ex parte Eastwood, Bridle, and Kolb, 163 USPQ 316). In view of this, the C and Si proportions that are described as "about" are not limited to the recited value but rather encompass proportions great than and less than the recited limits.

Claims 2-6, 8 and 9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over JP 61-9521 to Iguchi et al. in view of ASM Materials Engineering Dictionary.

Claims 7 and 10-12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Iguchi et al. in view of ASM Materials Engineering Dictionary.

For the reasons set forth below it is submitted that all of the claims are allowable over the prior art of record and therefore, the outstanding prior art rejections of the claims should properly be withdrawn.

Favorable reconsideration by the Examiner is earnestly solicited.

The Examiner has relied upon Iguchi et al as teaching:

> ...a method of making a silicon steel containing 3.2 to 4.5 wt% Si (Abstract) which, in view of the explanation set forth above under the heading, Claim Interpretation, is encompassed by the lower Si limit of "about 5" wt% recited in the instant claims. Iguchi '521 teaches that the steel contains 0.01 to 0.06 wt% C which is encompassed by the C content of 0.01 to 1.0 wt% recited in the instant claims. Iguchi '521 teaches that the Si steel is homogenized (Abstract) as recited in the instant claims. Iguchi '521's process also includes decarburization (Abstract) which is encompassed by claims 4 and 5. Iguchi '521 teaches that the Si steel is hot rolled and cold rolled to a final thickness of 0.3mm (Abstract). The hot rolling and cold rolling steps taught by Iguchi '521 are encompassed by hot rolling and cold rolling steps recited in claim 6. The final Si steel sheet thickness taught by Iguchi '521 of 0.3 mm is encompassed by the sheet thicknesses recited in claims 8 and 9.

Iguchi et al. discloses a method of manufacturing grain-oriented silicon steel sheets having superior surface properties, high magnetic flux densities and low iron losses.

The targeted technical problem of this patent is the deterioration in surface properties when the steel sheets are heated at high temperatures or when the concentration of Se or Sb is high in the sheet.

In order to overcome this problem, Iguchi et al. proposes a silicon steel sheet containing 0.01-0.06 wt% C, 3.2-4.5 wt% Si, 0.050-0.2 wt% Mn, 0.008-0.1 wt% Se, 0.003-0.1 wt% Mo and 0.005-0.1 wt% Sb that is heated and then hot rolled. The hot rolled sheet is then homogenized and cold

rolled twice interposing intermediate annealing. The sheet is then subjected to primary recrystallization annealing applied also as decarbonization occurs and a the final finishing annealing.

As a result, a grain oriented silicon steel sheet in developed having a secondary recrystallized grain orientation of {110}[001]. The grain oriented silicon steel sheet that has the superior surface properties, high magnetic flux densities and low iron losses is obtained by a coating compound of Mo.

Specifically, it is disclosed in paragraph 4, column 2 on page 5 that brittleness cracks would be developed if the Si concentration exceeds 4.5 wt%. Therefore, the Si concentration of Iguchi et al. is limited to 3.2-4.5 wt%.

Iguchi et al. focuses on the method to improve surface properties, magnetic flux densities and to lower iron losses of the grain oriented silicon steel sheet which contains 3.2-4.5 wt% of Si. It can be seen that Iguchi et al. does not mention any problem and method to improve the ductility or workability of high silicon steel which contains higher than 4.5 wt% of Si.

In addition, it is disclosed in Iguchi et al. that the method to increase Si concentration for the purpose of improving the resistance and lowering the iron loss of steels would lead to cracks during heating or hot rolling, if the Si concentration in the steel is higher than 3 wt%.

Such cracks will remain even after twice of cold rolling and four times of annealing. So the surface property of the resulting steel would be worse.

Therefore, Iguchi et al. provides the method of adding 0.005-0.1 wt% Mo into the high silicon steel which contains 3.1-4.5 wt% Si, and heating at temperatures higher than 800 °C to obtain grain oriented silicon steel with desired surface property and magnetic property in JP58-90040.

Although the surface properties of the high silicon steel is improved in this way, the high concentration of Se or Sb in the steel or the heating at high temperature would still lead to deterioration of its surface properties.

In order to overcome this problem, Iguchi et al. discloses a coating compound of Mo that is applied on the surface of the silicon sheet with 0.01-0.06 wt% C, 3.2-4.5 wt% Si, 0.050-0.2 wt% Mn, 0.008-0.1 wt% Se, 0.003-0.1 wt% Mo and 0.005-0.1 wt% Sb, in order to obtain grain oriented silicon steel sheet superior in surface property and having high magnetic flux density and low iron loss. In the background of invention, Iguchi et al discusses surface properties and magnetic properties of the grain oriented silicon steel with Si concentration of 3.1-4.5 wt%. Improvements include adding 0.005-0.1 wt% Mo and heating the silicon steel sheet at temperatures higher than 800 °C in order to obtain grain oriented silicon steel sheet superior in surface property and having high magnetic flux density and low iron loss. According to the disclosure from the last line in column 4 on page 114 to the first paragraph in column 1 on page 115, the goal is realized by precipitating fine compounds of Mo on surface area of the steel.

The teachings of Iguchi et al. are limited to improvements of surface properties and magnetic flux densities of the grain oriented steel with Si concentration of 3.2-4.5 wt%.

Iguchi et al. neither teaches nor relates to the high silicon steel with Si concentration of 5-10 wt%.

Moreover as relied upon by the Examiner, Iguchi et al. teaches a silicon steel containing 3.2 to 4.5 wt% Si.

Applicants independent claim 2 is limited to a steel containing 5 to 10 wt.% Si.

Thus, Iguchi et al. does not teach applicants' claimed invention.

The Examiner's further reliance upon the ASM Materials Engineering Dictionary does not address or overcome the differences between applicants' claimed invention and the teachings of Iguchi et al.

Based upon the above distinctions between the prior art relied upon by the Examiner and the present invention, and the overall teachings of prior art, properly considered as a whole, it is respectfully submitted that the Examiner cannot rely upon the prior art as required under 35 U.S.C. §103 to establish a *prima facie* case of obviousness of applicants' claimed invention.

It is, therefore, submitted that any reliance upon prior art would be improper inasmuch as the prior art does not remotely anticipate, teach, suggest or render obvious the present invention.

It is submitted that the claims, as now amended, and the discussion contained herein clearly show that the claimed invention is novel and neither anticipated nor obvious over the teachings of the prior art and the outstanding rejection of the claims should hence be withdrawn.

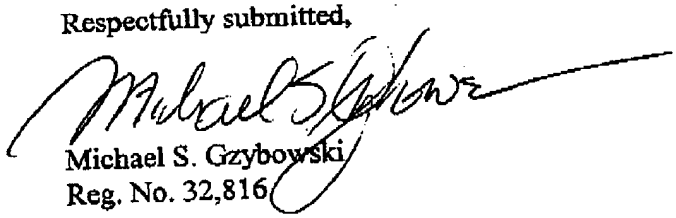
Therefore, reconsideration and withdrawal of the outstanding rejection of the claims and an early allowance of the claims is believed to be in order.

It is believed that the above represents a complete response to the Official Action and reconsideration is requested.

If upon consideration of the above, the Examiner should feel that there remain outstanding issues in the present application that could be resolved, the Examiner is invited to contact applicants' patent counsel at the telephone number given below to discuss such issues.

To the extent necessary, a petition for an extension of time under 37 CFR §1.136 is hereby made. Please charge the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 12-2136 and please credit any excess fees to such deposit account.

Respectfully submitted,



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